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Search Results - Record(s) 21 through 30 of 31 returned.

☐ 21. Document ID: US 20020116735 A1

Using default format because multiple data bases are involved.

L1: Entry 21 of 31 File: PGPB Aug 22, 2002

PGPUB-DOCUMENT-NUMBER: 20020116735
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20020116735 A1

TITLE: Nucleic acids encoding a plant enzyme involved in very long chain fatty acid synthesis

PUBLICATION-DATE: August 22, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Kunst, Ljerka	North Vancouver		CA	
Millar, Anthony A.	Vancouver		CA	

US-CL-CURRENT: 800/281; 435/193, 435/320.1, 435/410, 530/370, 536/23.2, 536/23.6, 800/286, 800/287

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw De

☐ 22. Document ID: US 20020038471 A1

L1: Entry 22 of 31 File: PGPB Mar 28, 2002

PGPUB-DOCUMENT-NUMBER: 20020038471
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20020038471 A1

TITLE: Use of VLCFAE for identifying herbicidally active compounds

PUBLICATION-DATE: March 28, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Lechelt-Kunze, Christa	Koln		DE	
Meissner, Ruth	Leverkusen		DE	
Tietjen, Klaus	Langenfeld		DE	

US-CL-CURRENT: 800/300; 530/370, 536/23.6, 536/24.1, 800/278

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw. De

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☐ 23. Document ID: US 6677145 B2

L1: Entry 23 of 31 File: USPT Jan 13, 2004

US-PAT-NO: 6677145
DOCUMENT-IDENTIFIER: US 6677145 B2

TITLE: Elongase genes and uses thereof

DATE-ISSUED: January 13, 2004

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Mukerji; Pradip	Gahanna	OH		
Leonard; Amanda Eun-Yeong	Gahanna	OH		
Huang; Yung-Sheng	Upper Arlington	OH		
Pereira; Suzette L.	Westerville	OH		

US-CL-CURRENT: 435/193; 435/252.31, 435/252.33, 435/254.11, 435/254.21, 435/254.22, 435/254.23, 435/254.3, 435/254.4, 435/254.5, 435/254.6, 435/320.1, 435/328, 435/348, 435/419, 536/23.2

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw. De

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☐ 24. Document ID: US 6635451 B2

L1: Entry 24 of 31 File: USPT Oct 21, 2003

US-PAT-NO: 6635451
DOCUMENT-IDENTIFIER: US 6635451 B2

TITLE: Desaturase genes and uses thereof

DATE-ISSUED: October 21, 2003

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Mukerji; Pradip	Gahanna	OH		
Huang; Yung-Sheng	Columbus	OH		
Das; Tapas	Worthington	OH		
Thurmond; Jennifer	Columbus	OH		
Pereira; Suzette L.	Westerville	OH		

US-CL-CURRENT: 435/71.1; 424/93.21, 424/93.7, 435/189, 435/320.1, 536/23.1, 536/23.2

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw De

☐ 25. Document ID: US 6428990 B1

L1: Entry 25 of 31 File: USPT Aug 6, 2002

US-PAT-NO: 6428990
DOCUMENT-IDENTIFIER: US 6428990 B1

TITLE: Human desaturase gene and uses thereof

DATE-ISSUED: August 6, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Mukerji; Pradip	Gahanna	OH		
Leonard; Amanda Eun-Yeong	Gahanna	OH		
Huang; Yung-Sheng	Columbus	OH		
Parker-Barnes; Jennifer M.	New Albany	OH		

US-CL-CURRENT: 435/134; 435/135, 435/136, 435/189, 435/252.3, 435/320.1, 530/350, 536/23.2

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw De

☐ 26. Document ID: US 6403349 B1

L1: Entry 26 of 31 File: USPT Jun 11, 2002

US-PAT-NO: 6403349
DOCUMENT-IDENTIFIER: US 6403349 B1

TITLE: Elongase gene and uses thereof

DATE-ISSUED: June 11, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Mukerji; Pradip	Gahanna	OH		
Leonard; Amanda Eun-Yeong	Gahanna	OH		
Huang; Yung-Sheng	Upper Arlington	OH		
Thurmond; Jennifer	Columbus	OH		
Kirchner; Stephen J.	Westerville	OH		

US-CL-CURRENT: 435/183; 435/252.3, 435/254.1, 435/320.1, 435/325, 536/23.1, 536/23.2

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw De

☐ 27. Document ID: US 6342657 B1

L1: Entry 27 of 31 File: USPT Jan 29, 2002

US-PAT-NO: 6342657
DOCUMENT-IDENTIFIER: US 6342657 B1

TITLE: Seed specific promoters

DATE-ISSUED: January 29, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Thomas; Terry L.	College Station	TX		
Hsieh; Tzung-Fu	College Station	TX		

US-CL-CURRENT: 800/287; 435/320.1, 435/419, 435/468, 435/471, 435/69.1, 536/24.1, 800/281, 800/298, 800/306, 800/312, 800/314, 800/320.1, 800/322

Full | Title | Citation | Front | Review | Classification | Date | Reference | Claims | KWIC | Draw De

☐ 28. Document ID: US 6274790 B1

L1: Entry 28 of 31 File: USPT Aug 14, 2001

US-PAT-NO: 6274790
DOCUMENT-IDENTIFIER: US 6274790 B1

TITLE: Nucleic acids encoding a plant enzyme involved in very long chain fatty acid synthesis

DATE-ISSUED: August 14, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Kunst; Ljerka	North Vancouver			CA
Millar; Anthony A.	Vancouver			CA

US-CL-CURRENT: 800/287; 435/468, 536/24.1, 800/281, 800/298

Full | Title | Citation | Front | Review | Classification | Date | Reference | Claims | KWIC | Draw De

☐ 29. Document ID: US 6100450 A

L1: Entry 29 of 31 File: USPT Aug 8, 2000

US-PAT-NO: 6100450
DOCUMENT-IDENTIFIER: US 6100450 A

TITLE: Seed specific promoters based on arabidopsis genes

DATE-ISSUED: August 8, 2000

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Thomas; Terry L.	College Station	TX		
Nuccio; Michael	Melrose	FL		

US-CL-CURRENT: 800/287; 435/320.1, 435/419, 435/468, 536/23.6, 536/24.1, 800/278, 800/281, 800/298, 800/306, 800/312, 800/314, 800/317.3, 800/320.1, 800/322

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw De

☐ 30. Document ID: US 5977436 A

L1: Entry 30 of 31 File: USPT Nov 2, 1999

US-PAT-NO: 5977436
DOCUMENT-IDENTIFIER: US 5977436 A
**** See image for Certificate of Correction ****

TITLE: Oleosin 5' regulatory region for the modification of plant seed lipid composition

DATE-ISSUED: November 2, 1999

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Thomas; Terry L.	College Station	TX		
Li; Zhongsen	College Station	TX		

US-CL-CURRENT: 800/281; 435/252.3, 435/320.1, 435/419, 435/468, 435/69.1, 536/23.6, 536/24.1, 800/278, 800/286, 800/287 , 800/288, 800/298, 800/307, 800/312, 800/314, 800/317.3, 800/320.1, 800/322

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw De

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Terms	Documents
elongase.clm.	31

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L1: Entry 23 of 31 File: USPT Jan 13, 2004

US-PAT-NO: 6677145
DOCUMENT-IDENTIFIER: US 6677145 B2

TITLE: Elongase genes and uses thereof

DATE-ISSUED: January 13, 2004

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Mukerji; Pradip	Gahanna	OH		
Leonard; Amanda Eun-Yeong	Gahanna	OH		
Huang; Yung-Sheng	Upper Arlington	OH		
Pereira; Suzette L.	Westerville	OH		

US-CL-CURRENT: 435/193; 435/252.31, 435/252.33, 435/254.11, 435/254.21, 435/254.22, 435/254.23, 435/254.3, 435/254.4, 435/254.5, 435/254.6, 435/320.1, 435/328, 435/348, 435/419, 536/23.2

CLAIMS:

What is claimed is:

1. An isolated nucleic acid sequence comprising or complementary to a nucleic acid sequence encoding a polypeptide having elongase activity, wherein the amino acid sequence of said polypeptide has at least 80% amino acid sequence identity to SEQ ID NO:7.

2. The isolated nucleic acid sequence of claim 1 wherein said sequence comprises SEQ ID NO:7.

3. The isolated nucleic acid sequence of claims 1 or 2 wherein said sequence encodes a functionally active elongase which utilizes a polyunsaturated fatty acid as a substrate.

4. The isolated nucleic acid sequence of claim 1 wherein said sequence is derived from the genus Thraustochytrium.

5. The isolated nucleic acid sequence of claim 4 wherein said sequence is derived from Thraustochytrium aureum.

6. A method of producing an elongase enzyme comprising the steps of: a) isolating a nucleotide sequence comprising SEQ ID NO:7 (FIG. 72); b) constructing a vector comprising: i) said isolated nucleotide sequence operably linked to ii) a promoter; c) introducing said vector into a host cell under time and conditions sufficient for expression of said elongase enzyme.

7. The method of claim 6 wherein said host cell is selected from the group consisting of a

eukaryotic cell or a prokaryotic cell.

8. The method of claim 7 wherein said prokaryotic cell is selected from the group consisting of E. coli, Cyanobacteria, and B. subtilis.

9. The method of claim 7 wherein said eukaryotic cell is selected from the group consisting of a mammalian cell, an insect cell, a plant cell and a fungal cell.

10. The method of claim 9 wherein said fungal cell is selected from the group consisting of Saccharomyces spp., Candida spp., Lipomyces starkey, Yarrowia spp., Kluyveromyces spp., Hansenula spp., Aspergillus spp., Penicillium spp., Neurospora spp., Trichoderma spp. and Pichia spp.

11. The method of claim 10 wherein said fungal cell is a yeast cell selected from the group consisting of Saccharomyces spp., Candida spp., Hansenula spp. and Pichia spp.

12. The method of claim 11 wherein said yeast cell is Saccharomyces cerevisiae.

13. A vector comprising: a) a nucleotide sequence comprising SEQ ID NO:7 (FIG. 72) operably linked to b) a promoter.

14. A host cell comprising said vector of claim 13.

15. The host cell of claim 14 wherein said host cell is selected from the group consisting of a eukaryotic cell or a prokaryotic cell.

16. The host cell of claim 15 wherein said prokaryotic cell is selected from the group consisting of E. coli, Cyanobacteria, and B. subtilis.

17. The host cell of claim 15 wherein said eukaryotic cell is selected from the group consisting of a mammalian cell, an insect cell, a plant cell and a fungal cell.

18. The host cell of claim 17 wherein said fungal cell is selected from the group consisting of Saccharomyces spp., Candida spp., Lipomyces starkey, Yarrowia spp., Kluyveromyces spp., Hansenula spp., Aspergillus spp., Penicillium spp., Neurospora spp., Trichoderma spp. and Pichia spp.

19. The host cell of claim 18 wherein said fungal cell is a yeast cell selected from the group consisting of Saccharomyces spp., Candida spp., Hansenula spp. and Pichia spp.

20. The host cell of claim 19 wherein said yeast cell is Saccharomyces cerevisiae.

21. A plant cell comprising said vector of claim 13, wherein expression of said nucleotide sequence of said vector results in production of a polyunsaturated fatty acid by said plant cell.

22. The plant cell of claim 21 wherein said polyunsaturated fatty acid is selected from the group consisting of dihom-.gamma.-linolenic acid (DGLA), 20:4n-3, adrenic acid (ADA) and .omega.3-docosapentaenoic acid.

First Hit Fwd Refs

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L1: Entry 25 of 31 File: USPT Aug 6, 2002

US-PAT-NO: 6428990
DOCUMENT-IDENTIFIER: US 6428990 B1

TITLE: Human desaturase gene and uses thereof

DATE-ISSUED: August 6, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Mukerji; Pradip	Gahanna	OH		
Leonard; Amanda Eun-Yeong	Gahanna	OH		
Huang; Yung-Sheng	Columbus	OH		
Parker-Barnes; Jennifer M.	New Albany	OH		

US-CL-CURRENT: 435/134; 435/135, 435/136, 435/189, 435/252.3, 435/320.1, 530/350, 536/23.2

CLAIMS:

What is claimed is:

1. A method for producing a polyunsaturated fatty acid comprising the steps of: a) isolating said nucleotide sequence represented by SEQ ID NO:1 (FIG. 12); b) constructing a vector comprising said isolated nucleotide sequence; c) introducing said vector into a host cell under time and conditions sufficient for expression of said human .DELTA.5-desaturase enzyme; and d) exposing said expressed human .DELTA.5-desaturase enzyme to a substrate polyunsaturated fatty acid in order to convert said substrate to a product polyunsaturated fatty acid.

2. The method according to claim 1, wherein said substrate polyunsaturated fatty acid is dihomo-.gamma.-linolenic acid (DGLA) or 20:4n-3 and said product polyunsaturated fatty acid is arachidonic acid (AA) or eicosapentaenoic acid (EPA), respectively.

3. The method according to claim 1 further comprising the step of exposing said product polyunsaturated fatty acid to an elongase in order to convert said product polyunsaturated fatty acid to another polyunsaturated fatty acid.

4. The method according to claim 3 wherein said product polyunsaturated fatty acid is AA or EPA and said another polyunsaturated fatty acid is adrenic acid or (n-3)-docosapentaenoic acid, respectively.

5. The method of claim 3 further comprising the steps of exposing said another polyunsaturated fatty acid to an additional desaturase in order to convert said another polyunsaturated fatty acid to a final polyunsaturated fatty acid.

WEST Search History

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DATE: Tuesday, June 22, 2004

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☐	L5	L1 with Caenorhabditis elegans	0
☐	L4	L1 and Caenorhabditis elegans	15
☐	L3	L1 and C. elegans	0
☐	L2	L1 and dna	30
☐	L1	elongase.clm.	31

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=> s Caenorhabditis elegans and elongase
L1          37 CAENORHABDITIS ELEGANS AND ELONGASE

=> dup rem l1
PROCESSING COMPLETED FOR L1
L2          15 DUP REM L1 (22 DUPLICATES REMOVED)

=> s l2 and 1985-1999/py
   5 FILES SEARCHED...
L3           0 L2 AND 1985-1999/PY

=> d l2 1-15 ibib ab

L2   ANSWER 1 OF 15  SCISEARCH  COPYRIGHT 2004 THOMSON ISI on STN
ACCESSION NUMBER:    2004:63691  SCISEARCH
THE GENUINE ARTICLE: 759HM
TITLE:               Elongation of long-chain fatty acids
AUTHOR:              Leonard A E; Pereira S L; Sprecher H; Huang Y S (Reprint)
CORPORATE SOURCE:    Abbott Labs, Ross Prod Div, Strateg Res, 625 Cleveland
                     Ave, Columbus, OH 43215 USA (Reprint); Abbott Labs, Ross
                     Prod Div, Strateg Res, Columbus, OH 43215 USA; Ohio State
                     Univ, Dept Mol & Cellular Biochem, Columbus, OH 43210 USA
COUNTRY OF AUTHOR:   USA
SOURCE:              PROGRESS IN LIPID RESEARCH, (JAN 2004) Vol. 43, No. 1, pp.
                     36-54.
                     Publisher: PERGAMON-ELSEVIER SCIENCE LTD, THE BOULEVARD,
                     LANGFORD LANE, KIDLINGTON, OXFORD OX5 1GB, ENGLAND.
                     ISSN: 0163-7827.
DOCUMENT TYPE:       General Review; Journal
LANGUAGE:            English
REFERENCE COUNT:     130

L2   ANSWER 2 OF 15  HCAPLUS  COPYRIGHT 2004 ACS on STN DUPLICATE 1
ACCESSION NUMBER:        2003:891922  HCAPLUS
DOCUMENT NUMBER:         139:376230
TITLE:                   Plant genes for sequence homologs of enzymes of
                         polyunsaturated fatty acid biosynthesis and their use
                         in engineering seed fatty acid profiles
INVENTOR(S):             Cirpus, Petra; Renz, Andreas; Lerchl, Jens; Kuijpers,
                         Anne-Marie
PATENT ASSIGNEE(S):      BASF Plant Science GmbH, Germany
```

SOURCE: Ger. Offen., 234 pp.
CODEN: GWXXBX
DOCUMENT TYPE: Patent
LANGUAGE: German
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 10219203	A1	20031113	DE 2002-10219203	20020429
WO 2003093482	A2	20031113	WO 2003-EP4297	20030425

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM

RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

PRIORITY APPLN. INFO.: DE 2002-10219203 A 20020429
OTHER SOURCE(S): MARPAT 139:376230

AB Plant genes encoding proteins that show homol. to enzymes of polyunsatd. fatty acid biosynthesis are identified for use in engineering the fatty acid profile of plant products such as seed or seed oils. Genes encoding possible fatty acid .DELTA.5- or .DELTA.6-desaturases and .DELTA.6 unsatd. fatty acid elongases are identified in a no. of plants, mosses, and fungi.

L2 ANSWER 3 OF 15 HCAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2003:678555 HCAPLUS
DOCUMENT NUMBER: 139:209952
TITLE: Fatty acid elongases identified by sequence homology and cDNAs encoding them and their pharmaceutical, nutritional and cosmetic uses
INVENTOR(S): Mukerji, Pradip; Eun-Yeong, Leonard Amanda; Huang, Yung-Sheng; Pereira, Suzette L.
PATENT ASSIGNEE(S): USA
SOURCE: U.S. Pat. Appl. Publ., 233 pp., Cont.-in-part of U.S. Ser. No. 903,456.
CODEN: USXXCO
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 4
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2003163845	A1	20030828	US 2002-156911	20020529
US 6403349	B1	20020611	US 1998-145828	19980902
US 2002138874	A1	20020926	US 2001-903456	20010711
US 6677145	B2	20040113		
US 2003177508	A1	20030918	US 2003-408736	20030404
WO 2003102138	A2	20031211	WO 2003-US16863	20030529

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM

RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ,

GW, ML, MR, NE, SN, TD, TG

PRIORITY APPLN. INFO.: US 1998-145828 A2 19980902
US 1999-379095 A2 19990823
US 2000-624670 A2 20000724
US 2001-903456 A2 20010711
US 2002-156911 A 20020529

AB The subject invention relates to the identification of several genes involved in the elongation of polyunsatd. acids (i.e., "elongases") and to uses thereof. At least two of these genes are also involved in the elongation of monounsatd. fatty acids. In particular, **elongase** is utilized in the conversion of .gamma.-linolenic acid (GLA) to dihomo-.gamma.-linolenic acid (DGLA) and in the conversion of arachidonic acid to adrenic acid (ADA), or eicosapentaenoic acid (EPA) to .omega.3-docosapentaenoic acid (DPA). DGLA may be utilized in the prodn. of polyunsatd. fatty acids, such as arachidonic acid (AA), docosahexaenoic acid (DHA), EPA, adrenic acid, .omega.6-docosapentaenoic acid or .omega.3-docosapentaenoic acid which may be added to pharmaceutical compns., nutritional compns., animal feeds, as well as other products such as cosmetics. Cloning of the fatty acid **elongase** gene of Mortierella alpina by PCR using primers derived from conserved sequences of the enzyme and adjusted for M. alpina codon usage is demonstrated. Expression of the **elongase** gene in combination with a .DELTA.5-desaturase gene in Saccharomyces cerevisiae resulted in the appearance of arachidonic acid. The S. cerevisiae fatty acid **elongase** was unable to convert .gamma.-linolenic acid to dihomo-.gamma.-linolenic acid, although the M. alpina enzyme did so efficiently. Cloning of a cDNA for a fatty acid **elongase** of Pavlova is also demonstrated.

L2 ANSWER 4 OF 15 HCAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2003:701961 HCAPLUS
DOCUMENT NUMBER: 139:319166
TITLE: Acyl carriers used as substrates by the desaturases and elongases involved in very long-chain polyunsaturated fatty acids biosynthesis reconstituted in yeast
AUTHOR(S): Domergue, Frederic; Abbadi, Amine; Ott, Claudia; Zank, Thorsten K.; Zaehringer, Ulrich; Heinz, Ernst
CORPORATE SOURCE: Institut fuer Allgemeine Botanik, Universitaet Hamburg, Hamburg, 22609, Germany
SOURCE: Journal of Biological Chemistry (2003), 278(37), 35115-35126
CODEN: JBCHA3; ISSN: 0021-9258
PUBLISHER: American Society for Biochemistry and Molecular Biology
DOCUMENT TYPE: Journal
LANGUAGE: English

AB The health benefits attributed to very long-chain polyunsatd. fatty acids and the long term goal to produce them in transgenic oilseed crops have led to the cloning of all the genes coding for the desaturases and elongases involved in their biosynthesis. The encoded activities have been confirmed in vivo by heterologous expression, but very little is known about the actual acyl substrates involved in these pathways. Using a .DELTA.6-**elongase** and front-end desaturases from different organisms, we have reconstituted in Saccharomyces cerevisiae the biosynthesis of arachidonic acid from exogenously supplied linoleic acid in order to identify these acyl carriers. Acyl-CoA measurements strongly suggest that the elongation step involved in polyunsatd. fatty acids biosynthesis is taking place within the acyl-CoA pool. In contrast, detailed analyses of lipids revealed that the two desatn. steps (.DELTA.5 and .DELTA.6) occur predominantly at the sn-2 position of phosphatidylcholine when using .DELTA.5- and .DELTA.6-desaturases from lower plants, fungi, worms, and algae. The specificity of these .DELTA.6-desaturases for the fatty acid acylated at this particular position as well as a limiting re-equilibration with the acyl-CoA pool

result in the accumulation of .gamma.-linolenic acid at the sn-2 position of phosphatidylcholine and prevent efficient arachidonic acid biosynthesis in yeast. We confirm by using a similar exptl. approach that, in contrast, the human .DELTA.6-desaturase uses linoleoyl-CoA as substrate, which results in high efficiency of the subsequent elongation step. In addn., we report that .DELTA.12-desaturases have no specificity toward the lipid polar headgroup or the sn-position.

REFERENCE COUNT: 52 THERE ARE 52 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L2 ANSWER 5 OF 15 HCAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2003:194190 HCAPLUS

DOCUMENT NUMBER: 139:243212

TITLE: Suppression of the ELO-2 FA elongation activity results in alterations of the fatty acid composition and multiple physiological defects, including abnormal ultradian rhythms, in **Caenorhabditis elegans**

AUTHOR(S): Kniazeva, Marina; Sieber, Matt; McCauley, Scott; Zhang, Kang; Watts, Jennifer L.; Han, Min

CORPORATE SOURCE: Howard Hughes Medical Institute and Department of Molecular, Cellular, and Developmental Biology, University of Colorado, Boulder, CO, 80309, USA

SOURCE: Genetics (2003), 163(1), 159-169
CODEN: GENTAE; ISSN: 0016-6731

PUBLISHER: Genetics Society of America

DOCUMENT TYPE: Journal

LANGUAGE: English

AB We use C. elegans to study fatty acid (FA) elongation activities and assocd. abnormal phenotypes. In this article we report that the predicted C. elegans F1 1E6.5/ELO-2 is a functional enzyme with the FA elongation activity. It is responsible for the elongation of palmitic acid and is involved in PUFA biosynthesis. RNAi-mediated suppression of ELO-2 causes an accumulation of palmitate and an assocd. decrease in the PUFA fraction in triacylglycerides and phospholipid classes. This imbalance in the FA compn. results in multiple phenotypic defects such as slow growth, small body size, reproductive defects, and changes in rhythmic behavior. ELO-2 cooperates with the previously reported ELO-1 in 20-carbon PUFA prodn., and .gtoreq.1 of the enzymes must function to provide normal growth and development in C. elegans. The presented data indicate that suppression of a single enzyme of the FA elongation machinery is enough to affect various organs and systems in worms. This effect resembles syndromic disorders in humans.

REFERENCE COUNT: 39 THERE ARE 39 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L2 ANSWER 6 OF 15 HCAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2002:736949 HCAPLUS

DOCUMENT NUMBER: 137:275009

TITLE: Thraustochytrium fatty acid **elongase** and cDNA and production of fatty acids for pharmaceuticals, food and feed, and cosmetics

INVENTOR(S): Mukerji, Pradip; Leonard, Amanda Eun-Yeong; Huang, Yung-Sheng; Pereira, Suzette L.

PATENT ASSIGNEE(S): Abbott Laboratories, USA

SOURCE: U.S. Pat. Appl. Publ., 135 pp., Cont.-in-part of U.S. Ser. No. 624,670.
CODEN: USXXCO

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 4

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE

US 2002138874 A1 20020926 US 2001-903456 20010711
US 6677145 B2 20040113
US 6403349 B1 20020611 US 1998-145828 19980902
WO 2002008401 A2 20020131 WO 2001-US23259 20010724
WO 2002008401 A3 20030313
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG
EP 1309699 A2 20030514 EP 2001-955933 20010724
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR
US 2003163845 A1 20030828 US 2002-156911 20020529
US 2003177508 A1 20030918 US 2003-408736 20030404
PRIORITY APPLN. INFO.: US 1998-145828 A2 19980902
US 1999-379095 A2 19990823
US 2000-624670 A2 20000724
US 2001-903456 A 20010711
WO 2001-US23259 W 20010724

AB The long-chain fatty acid **elongase** and cDNA of Thraustochytrium aureum is disclosed. The **elongase** may be used in the conversion of .gamma.-linolenic acid (GLA) to dihomo-.gamma.-linolenic acid (DGLA), of arachidonic acid (AA) to adrenic acid (ADA), or eicosapentaenoic acid (EPA) to .omega.3-docosapentaenoic acid (DPA). DGLA may be utilized in the prodn. of polyunsatd. fatty acids, such as AA, docosahexaenoic acid (DHA), EPA, adrenic acid, .omega.6-docosapentaenoic acid or .omega.3-docosapentaenoic acid which may be added to pharmaceutical compns., nutritional compns., animal feeds, as well as other products such as cosmetics.

L2 ANSWER 7 OF 15 MEDLINE on STN DUPLICATE 2
ACCESSION NUMBER: 2002179491 MEDLINE
DOCUMENT NUMBER: PubMed ID: 11792704
TITLE: A Saccharomyces cerevisiae gene required for heterologous fatty acid **elongase** activity encodes a microsomal beta-keto-reductase.
AUTHOR: Beaudoin Frederic; Gable Ken; Sayanova Olga; Dunn Teresa; Napier Johnathan A
CORPORATE SOURCE: Institute of Arable Crops Research-Long Ashton Research Station, Long Ashton, Bristol BS41 9AF, United Kingdom.
SOURCE: Journal of biological chemistry, (2002 Mar 29) 277 (13) 11481-8.
Journal code: 2985121R. ISSN: 0021-9258.
PUB. COUNTRY: United States
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 200205
ENTRY DATE: Entered STN: 20020326
Last Updated on STN: 20030105
Entered Medline: 20020510

AB A number of Saccharomyces cerevisiae membrane-bound oxidoreductases were examined for potential roles in microsomal fatty acid elongation, by assaying heterologous elongating activities in individual deletion mutants. One yeast gene, YBR159w, was identified as being required for activity of both the **Caenorhabditis elegans** **elongase** PEA1 (F56H11.4) and the Arabidopsis thaliana **elongase** FAE1. Ybr159p shows some limited homology to human steroid dehydrogenases and is a member of the short-chain alcohol dehydrogenase superfamily. Disruption of YBR159w is not lethal, in

contrast to previous reports, although the mutants are slow growing and display high temperature sensitivity. Both Ybr159p and an Arabidopsis homologue were shown to restore heterologous **elongase** activities when expressed in ybr159Delta mutants. Biochemical characterization of microsomal preparations from ybr159Delta cells revealed a primary perturbation in beta-ketoacyl reduction, confirming the assignment of YBR159w as encoding a component of the microsomal **elongase**.

L2 ANSWER 8 OF 15 MEDLINE on STN DUPLICATE 3
ACCESSION NUMBER: 2002245739 MEDLINE
DOCUMENT NUMBER: PubMed ID: 11972048
TITLE: Genetic dissection of polyunsaturated fatty acid synthesis in **Caenorhabditis elegans**.
AUTHOR: Watts Jennifer L; Browse John
CORPORATE SOURCE: Institute of Biological Chemistry, Washington State University, Pullman, WA 99164-6340, USA.
CONTRACT NUMBER: R01 GM62521 (NIGMS)
SOURCE: Proceedings of the National Academy of Sciences of the United States of America, (2002 Apr 30) 99 (9) 5854-9. Journal code: 7505876. ISSN: 0027-8424.
PUB. COUNTRY: United States
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 200206
ENTRY DATE: Entered STN: 20020502
Last Updated on STN: 20030105
Entered Medline: 20020611

AB Polyunsaturated fatty acids (PUFAs) are important membrane components and precursors of signaling molecules. To investigate the roles of these fatty acids in growth, development, and neurological function in an animal system, we isolated **Caenorhabditis elegans** mutants deficient in PUFA synthesis by direct analysis of fatty acid composition. C. elegans possesses all the desaturase and **elongase** activities to synthesize arachidonic acid and eicosapentaenoic acid from saturated fatty acid precursors. In our screen we identified mutants with defects in each fatty acid desaturation and elongation step of the PUFA biosynthetic pathway. The fatty acid compositions of the mutants reveal the substrate preferences of the desaturase and **elongase** enzymes and clearly demarcate the steps of this pathway. The mutants show that C. elegans does not require n3 or Delta5-unsaturated PUFAs for normal development under laboratory conditions. However, mutants with more severe PUFA deficiencies display growth and neurological defects. The mutants provide tools for investigating the roles of PUFAs in membrane biology and cell function in this animal model.

L2 ANSWER 9 OF 15 SCISEARCH COPYRIGHT 2004 THOMSON ISI on STN
ACCESSION NUMBER: 2002:741520 SCISEARCH
THE GENUINE ARTICLE: 589VT
TITLE: Cloning and functional characterization of Phaeodactylum tricornutum front-end desaturases involved in eicosapentaenoic acid biosynthesis
AUTHOR: Domergue F (Reprint); Lerchl J; Zahringer U; Heinz E
CORPORATE SOURCE: Univ Hamburg, Inst Allgemeine Bot, Ohnhorststr 18, D-22609 Hamburg, Germany (Reprint); Univ Hamburg, Inst Allgemeine Bot, D-22609 Hamburg, Germany; BASF Plant Sci GmbH, Ludwigshafen, Germany; Forschungszentrum Borstel, Borstel, Germany
COUNTRY OF AUTHOR: Germany
SOURCE: EUROPEAN JOURNAL OF BIOCHEMISTRY, (AUG 2002) Vol. 269, No. 16, pp. 4105-4113.
Publisher: BLACKWELL PUBLISHING LTD, P O BOX 88, OSNEY MEAD, OXFORD OX2 0NE, OXON, ENGLAND.
ISSN: 0014-2956.
DOCUMENT TYPE: Article; Journal

LANGUAGE: English
REFERENCE COUNT: 43
ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

AB Phacodactylum tricornutum is an unicellular silica-less diatom in which eicosapentaenoic acid accumulates up to 30% of the total fatty acids. This marine diatom was used for cloning genes encoding fatty acid desaturases involved in eicosapentaenoic acid biosynthesis. Using a combination of PCR, mass sequencing and library screening, the coding sequences of two desaturases were identified. Both protein sequences contained a cytochrome b(5) domain fused to the N-terminus and the three histidine clusters common to all front-end fatty acid desaturases. The full length clones were expressed in Saccharomyces cerevisiae and characterized as Delta5- and Delta6-fatty acid desaturases. The substrate specificity of each enzyme was determined and confirmed their involvement in eicosapentaenoic acid biosynthesis. Using both desaturases in combination with the Delta6-specific **elongase** from Physcomitrella patens, the biosynthetic pathways of arachidonic and eicosapentaenoic acid were reconstituted in yeast. These reconstitutions indicated that these two desaturases functioned in the omega3- and omega6-pathways, in good agreement with both routes coexisting in Phaeodactylum tricornutum. Interestingly, when the substrate selectivity of each enzyme was determined, both desaturases converted the omega3- and omega6-fatty acids with similar efficiencies, indicating that none of them was specific for either the omega3- or the omega6-pathway. To our knowledge, this is the first report describing the isolation and biochemical characterization of fatty acid desaturases from diatoms.

L2 ANSWER 10 OF 15 MEDLINE on STN DUPLICATE 4
ACCESSION NUMBER: 2001545829 MEDLINE
DOCUMENT NUMBER: PubMed ID: 11592725
TITLE: Genomic and functional characterization of polyunsaturated fatty acid biosynthesis in **Caenorhabditis elegans**.
AUTHOR: Napier J A; Michaelson L V
CORPORATE SOURCE: IACR-Long Ashton Research Station, Department of Agricultural Sciences, University of Bristol, United Kingdom.. jon.napier@bbsrc.ac.uk
SOURCE: Lipids, (2001 Aug) 36 (8) 761-6. Ref: 42
Journal code: 0060450. ISSN: 0024-4201.
PUB. COUNTRY: United States
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
General Review; (REVIEW)
(REVIEW, TUTORIAL)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 200203
ENTRY DATE: Entered STN: 20011011
Last Updated on STN: 20020322
Entered Medline: 20020321

AB The biosynthetic pathway for polyunsaturated fatty acids in the model animal **Caenorhabditis elegans** was examined in the context of the completed genome sequence. The genomic organization and location of seven desaturase genes and one **elongase** activity, all previously identified by functional characterization, were elucidated. A pathway for the biosynthesis of polyunsaturated fatty acids in C. elegans was proposed based on these genes. The role of gene duplication in enzyme evolution and proliferation is discussed.

L2 ANSWER 11 OF 15 HCAPLUS COPYRIGHT 2004 ACS on STN DUPLICATE 5
ACCESSION NUMBER: 2000:666883 HCAPLUS
DOCUMENT NUMBER: 133:248957
TITLE: Protein and cDNA sequences of **Caenorhabditis elegans** polysaturated fatty acid (PUFA) **elongase** and uses thereof
INVENTOR(S): Napier, Johnathan A.

PATENT ASSIGNEE(S): The University of Bristol, UK
SOURCE: PCT Int. Appl., 42 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2000055330	A1	20000921	WO 2000-GB1035	20000320
WO 2000055330	C2	20020829		
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
EP 1161542	A1	20011212	EP 2000-911091	20000320
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
JP 2002538826	T2	20021119	JP 2000-605748	20000320
NO 2001004542	A	20010918	NO 2001-4542	20010918

PRIORITY APPLN. INFO.: GB 1999-6307 A 19990318
GB 2000-3869 A 20000218
WO 2000-GB1035 W 20000320

AB This invention relates to cDNA sequences encoding polysatd. fatty acid (PUFA) **elongase** from **Caenorhabditis elegans**, and applications for the PUFA **elongase**. A method of synthesizing di-homo-.gamma.-linolenic acid from .gamma.-linolenic acid catalyzed by the PUFA **elongase** is reported. This invention relates also to expression of the recombinant PUFA **elongase** of C. elegans in yeast. The invention provides also a method of producing either arachidonic acid or eicosapentanoic acid in yeast from dienoic or trienoic 18 carbon substrates via expression of .DELTA.5-fatty acid desaturases and PUFA **elongase** simultaneously. The invention further relates to the uses of PUFA **elongase** in producing a foodstuff, dietary supplement and pharmaceutical prepn. contg. a polyunsatd. fatty acid.

REFERENCE COUNT: 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L2 ANSWER 12 OF 15 HCAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2000:161459 HCAPLUS
DOCUMENT NUMBER: 132:218000
TITLE: Polyunsaturated fatty acid **elongase** genes and their cloning and uses in production of commercial products
INVENTOR(S): Mukerji, Pradip; Leonard, Amanda Eun-yeong; Huang, Yung-sheng; Thurmond, Jennifer; Kirchner, Stephen J.; Parker-barnes, Jennifer M.; Das, Tapas
PATENT ASSIGNEE(S): Abbott Laboratories, USA
SOURCE: PCT Int. Appl., 210 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 4
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2000012720	A2	20000309	WO 1999-US19715	19990830

WO 2000012720 A3 20000908
W: AU, BR, CA, CN, CZ, HU, IL, JP, KR, MX, NO, NZ
RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE
US 6403349 B1 20020611 US 1998-145828 19980902
CA 2341336 AA 20000309 CA 1999-2341336 19990830
AU 9956964 A1 20000321 AU 1999-56964 19990830
AU 768301 B2 20031204
EP 1108039 A2 20010620 EP 1999-943978 19990830
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI
JP 2002523098 T2 20020730 JP 2000-567706 19990830
PRIORITY APPLN. INFO.: US 1998-145828 A 19980902
WO 1999-US19715 W 19990830

AB The subject invention relates to the identification of four genes involved in the elongation of polyunsatd. acids (i.e., "elongases") and to uses thereof. Two of these genes are also involved in the elongation of monounsatd. fatty acids. Thus, cDNA nucleotide and deduced amino acid sequences are provided for 2 elongases from Mortierella alpina, 1 **elongase** from human, and an **elongase** from **Caenorhabditis elegans**. In particular, the elongases are utilized in the conversion of .gamma.-linolenic acid (GLA) to dihomo-.gamma.-linolenic acid (DGLA) and in the conversion of DGLA or 20:4n-3 to eicosapentaenoic acid (EPA). DGLA may be utilized in the prodn. of polyunsatd. fatty acids, such as arachidonic acid (AA), docosahexaenoic acid (DHA), EPA, adrenic acid, .omega.6-docosapentaenoic acid or .omega.3-docosapentaenoic acid which may be added to pharmaceutical compns., nutritional compns., animal feeds, as well as other products such as cosmetics.

L2 ANSWER 13 OF 15 MEDLINE on STN DUPLICATE 6
ACCESSION NUMBER: 2000300916 MEDLINE
DOCUMENT NUMBER: PubMed ID: 10829069
TITLE: Heterologous reconstitution in yeast of the polyunsaturated fatty acid biosynthetic pathway.
AUTHOR: Beaudoin F; Michaelson L V; Hey S J; Lewis M J; Shewry P R; Sayanova O; Napier J A
CORPORATE SOURCE: Institute of Arable Crops Research, Long Ashton Research Station, Department of Agricultural Sciences, University of Bristol, Long Ashton, Bristol BS41 9AF, United Kingdom.
SOURCE: Proceedings of the National Academy of Sciences of the United States of America, (2000 Jun 6) 97 (12) 6421-6. Journal code: 7505876. ISSN: 0027-8424.
PUB. COUNTRY: United States
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 200007
ENTRY DATE: Entered STN: 20000720
Last Updated on STN: 20000720
Entered Medline: 20000713

AB A **Caenorhabditis elegans** ORF encoding the presumptive condensing enzyme activity of a fatty acid **elongase** has been characterized functionally by heterologous expression in yeast. This ORF (F56H11. 4) shows low similarity to Saccharomyces cerevisiae genes involved in fatty acid elongation. The substrate specificity of the C. elegans enzyme indicated a preference for Delta(6)-desaturated C18 polyunsaturated fatty acids. Coexpression of this activity with fatty acid desaturases required for the synthesis of C20 polyunsaturated fatty acids resulted in the accumulation of arachidonic acid from linoleic acid and eicosapentaenoic acid from alpha-linolenic acid. These results demonstrate the reconstitution of the n-3 and n-6 polyunsaturated fatty acid biosynthetic pathways. The C. elegans ORF is likely to interact with endogenous components of a yeast elongation system, with the heterologous nematode condensing enzyme F56H11.4 causing a redirection of enzymatic

activity toward polyunsaturated C18 fatty acid substrates.

L2 ANSWER 14 OF 15 MEDLINE on STN DUPLICATE 7
ACCESSION NUMBER: 2001301171 MEDLINE
DOCUMENT NUMBER: PubMed ID: 11171161
TITLE: Production of C20 polyunsaturated fatty acids (PUFAs) by pathway engineering: identification of a PUFA **elongase** component from **Caenorhabditis elegans**.
AUTHOR: Beaudoin F; Michaelson L V; Lewis M J; Shewry P R; Sayanova O; Napier J A
CORPORATE SOURCE: IACR-Long Ashton Research Station, Long Ashton, Bristol BS41 9AF, UK.
SOURCE: Biochemical Society transactions, (2000 Dec) 28 (6) 661-3. Journal code: 7506897. ISSN: 0300-5127.
PUB. COUNTRY: England: United Kingdom
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 200105
ENTRY DATE: Entered STN: 20010604
Last Updated on STN: 20010604
Entered Medline: 20010531

AB Using a combination of database-mining and functional characterization, we have identified a component of the polyunsaturated fatty acid (PUFA) **elongase**. Co-expression of this elongating activity with fatty acid desaturases has allowed us to heterologously reconstitute the PUFA biosynthetic pathway. Both these enzymes (desaturases and **elongase** components) have undergone gene-duplication events which provide a paradigm for the diverged nature of PUFA biosynthetic activities.

L2 ANSWER 15 OF 15 SCISEARCH COPYRIGHT 2004 THOMSON ISI on STN
ACCESSION NUMBER: 2001:156426 SCISEARCH
THE GENUINE ARTICLE: 401RD
TITLE: Cloning and functional expression of the first plant fatty acid **elongase** specific for Delta(6)-polyunsaturated fatty acids
AUTHOR: Zank T K; Zahringer U; Lerchl J; Heinz E (Reprint)
CORPORATE SOURCE: Univ Hamburg, Inst Allgemeine Bot, Ohnhorststr 18, D-22609 Hamburg, Germany (Reprint); Univ Hamburg, Inst Allgemeine Bot, D-22609 Hamburg, Germany; Forschungszentrum Borstel, D-23845 Borstel, Germany; BASF AG, D-67056 Ludwigshafen, Germany
COUNTRY OF AUTHOR: Germany
SOURCE: BIOCHEMICAL SOCIETY TRANSACTIONS, (DEC 2000) Vol. 28, Part 6, pp. 654-658.
Publisher: PORTLAND PRESS, 59 PORTLAND PLACE, LONDON W1N 3AJ, ENGLAND.
ISSN: 0300-5127.
DOCUMENT TYPE: Article; Journal
LANGUAGE: English
REFERENCE COUNT: 26
ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

AB In order to elucidate the biosynthesis of long-chain polyunsaturated fatty acids (PUFAs) in plants we searched for a cDNA encoding a Delta (6)-specific PUFA **elongase** from Physcomitrella patens, which is known to contain high proportions of arachidonic acid (20:4 Delta (5,8,11,14)). A, EST done from P. patens was identified by its low homology to the yeast gene ELO1, which is required for the elongation of medium-chain fatty acids. We functionally characterized this cDNA by heterologous expression in Saccharomyces cerevisiae grown in the presence of several fatty acids. Analysis of the fatty acid profile of the transgenic yeast revealed that the cDNA encodes a protein that leads to the elongation of the C-18 Delta (6)-polyunsaturated fatty acids gamma

-linolenic acid (18:3 Delta (6,9,12)) and stearidonic acid (18:4 Delta (6,9,12,15)), which were recovered to 45-51 % as their elongation products. In contrast, linoleic and a-linolenic acids were hardly elongated and we could not measure any elongation of saturated and mono-unsaturated fatty acids (including 18:1 Delta (6)), indicating that the **elongase** is highly specific for the polyunsaturated nature of the fatty acid acting as substrate.

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(FILE 'HOME' ENTERED AT 14:27:46 ON 22 JUN 2004)

FILE 'MEDLINE, HCAPLUS, BIOSIS, SCISEARCH, EMBASE, BIOTECHDS' ENTERED AT 14:28:56 ON 22 JUN 2004

L1 37 S CAENORHABDITIS ELEGANS AND ELONGASE
L2 15 DUP REM L1 (22 DUPLICATES REMOVED)
L3 0 S L2 AND 1985-1999/PY

=> log y

COST IN U.S. DOLLARS	SINCE FILE ENTRY	TOTAL SESSION
FULL ESTIMATED COST	49.25	49.67

DISCOUNT AMOUNTS (FOR QUALIFYING ACCOUNTS)	SINCE FILE ENTRY	TOTAL SESSION
CA SUBSCRIBER PRICE	-4.85	-4.85

STN INTERNATIONAL LOGOFF AT 14:34:22 ON 22 JUN 2004